

County: Dorset **Site Name:** Purbeck Ridge (East)

District: Purbeck

Status: Site of Special Scientific Interest (SSSI) notified under Section 28 of the Wildlife and Countryside Act 1981, as amended.

Local Planning Authority: Purbeck District Council, Dorset County Council

National Grid Reference: SY 959823 **Area:** 144.36 (ha)

Ordnance Survey Sheet 1:50,000: 195 **1:10,000:** 98SE, SZ08SE

Date Notified (Under 1949 Act): 1952 (part), 1954 (part), 1977

Dates Notified (Under 1981 Act): 1986 (part), 1999

Other Information:

The site is amended by extensions. The site contains three Geological Conservation Review sites. Part of the site lies within the Dorset Heritage Coast and Area of Outstanding Natural Beauty. The site adjoins Studland Cliffs SSSI.

Description and Reasons for Notification:

Purbeck Ridge lies in south Dorset and extends for 15 kilometres westwards from the steep chalk of Ballard Cliffs on the sea coast to Povington Hill and westwards to Bindon Hill and Lulworth Cove, the latter section lying within the South Dorset Coast SSSI. Purbeck Ridge (East) comprises the section of the Ridge extending eastwards from Corfe Castle to the coast at Ballard Down and Cliffs.

The Ridge rises abruptly from the Tertiary sands and clays of the Poole Basin at 50 metres to reach 199 metres at Godlingston Hill and comprises steeply inclined Upper Chalk with narrow outcrops of Upper and Lower Greensand and Gault clay at the foot of the south facing slopes. The low sea-cliffs from Swanage to Ballard Point expose Upper Wealden sands and clays which are overlain by Lower Greensand. Purbeck Ridge (East) supports extensive areas of high quality chalk downland with important invertebrate and lower plant communities, scrub and ancient broadleaf woodland. Acid grassland and chalk heath are present on localised drift, sands and clay. The site contains geological and geomorphological interest on the coast at Ballard Down, Punfield Cove and Swanage Cliffs.

Biological Interest:

Ancient broadleaf woodland is present on the north side of the Ridge at King's Wood which has a fine, natural high forest structure with old forest growth characteristics and a diverse flora. Several stands of small-leaved lime *Tilia cordata* are present and is of particular interest for its

restricted distribution in Dorset. On steep slopes, moist brown earth soils support coppice-with-standards and ash *Fraxinus excelsior*/oak *Quercus robur* high forest. The understorey contains maple *Acer campestre*, hazel *Corylus avellana* and occasionally spindle *Euonymus europaeus*. The ground flora is rich in species characteristic of ancient woods and diversity is provided by the varied soil conditions overlying the chalk and clay. The highest slopes support clay-with-flints with more free draining soils and oak is prominent over holly *Ilex aquifolium*, hawthorn *Crataegus monogyna* and hazel. Grasses and ferns are characteristic such as broad buckler fern *Dryopteris dilatata*, male fern *Dryopteris filix-mas* and meadow fescue *Festuca pratensis* with wood rush *Luzula sylvatica*, wood sorrel *Oxalis acetosella* and greater stitchwort *Stellaria holostea*. Pockets of deeper soil support an abundance of bluebell *Hyacinthoides non-scripta* and pignut *Conopodium majus*.

Dog's mercury *Mercurialis perennis* covers the steeper slopes with wood spurge *Euphorbia amygdaloides*, wood melick *Melica uniflora* and occasional great wood-rush *Luzula sylvatica*. Deeper, moist soils are dominated by ramsons *Allium ursinum* with occasional stinking iris *Iris foetidissima*. Hart's tongue fern *Phyllitis scolopendrium* and soft shield fern *Polystichum setiferum* are abundant on thin soils and exposed rock. Climbing shrubs such as ivy *Hedera helix* and black bryony *Tamus communis* are frequent, and King's Wood has well-developed lianas of traveller's joy *Clematis vitalba*. The moist, humid conditions have allowed a luxuriant epiphytic community to develop with the ferns common polypody *Polypodium vulgare* and intermediate polypody *P. interjectum* locally abundantly on trees such as oak and maple.

Two distinct chalk grassland communities have developed in response to contrasting levels of grazing across the site together with localised areas of scrub, acid and neutral grassland. The richest downland is present where stock grazing has suppressed the growth of grasses to produce and maintain a short sward. This community is characterised by the high diversity and abundance of herbs such as wild thyme *Thymus polytrichus*, horseshoe vetch *Hippocrepis comosa*, salad burnet *Sanguisorba minor*, kidney vetch *Anthyllis vulneraria* and hoary plantain *Plantago media*. The endemic spring gentian *Gentianella anglica*¹ is present on Ballard Down whilst saw-wort *Serratula tinctoria* and yellow wort *Blackstonia perfoliata* are locally abundant. Grasses and sedges present in the short turf include tor grass *Brachypodium pinnatum*, quaking grass *Briza media*, sheep's fescue *Festuca ovina*, meadow oat-grass *Helictotrichon pratensis* and glaucous sedge *Carex flacca*. The Nationally Scarce nit-grass *Gastridium ventricosum* is present on Ballard Down and pale St. John's wort *Hypericum montanum* is present on the Ridge at only one of two sites in Dorset. Orchids such as autumn lady's tresses *Spiranthes spiralis*, pyramidal orchid *Anacamptis pyramidalis*, early purple orchid *Orchis mascula* are locally plentiful whilst bee orchid *Ophrys apifera* is occasional. Chalk heath is present on localised areas of acidic, sandy soils and contains bristle bent *Agrostis curtisii*, bell heather

Erica cinerea, heath bedstraw *Galium saxatile* and lichen *Cladonia portentosa*.

A taller, grassy sward is present where grazing levels are reduced and in hay meadows and this is characterised by the prominence of tor-grass, sheep's fescue and yellow oat-grass *Trisetum flavescens*. Typical and abundant herbs include lady's bedstraw *Galium verum*, carline thistle *Carlina vulgaris* and bird's-foot-trefoil *Lotus corniculatus*. Herbs with spreading rosettes that are able to persist in the overtopping sward include primrose *Primula vulgaris*, dwarf thistle *Cirsium acaule* and hoary plantain *Plantago media*.

European gorse *Ulex europaeus* is widespread and a diverse chalk scrub is locally dominant containing tree and shrubs such as ash, blackthorn *Prunus spinosa*, wild privet *Ligustrum vulgare*, wayfaring tree *Viburnum lantana* and clematis providing habitat for migrant and breeding birds such as stonechat and linnet.

The steep south-facing slopes of Ballard Cliff support a variety of coastal habitats such as ungrazed chalk grassland, chalk scree and seepages. Shallow soil on cliff ledges and crevices has abundant red fescue *Festuca rubra* and wild carrot *Daucus carota* with an assemblage of Nationally Scarce plants such as wild cabbage *Brassica oleracea*, Nottingham catchfly *Silene nutans*, golden samphire *Inula crithmoides* and white horehound *Marrubium vulgare*. The uncommon yellow-horned poppy *Glaucium flavum* is occasional.

Ballard Down and Godlingston Hill have well-developed terricolous and saxicolous lichen and bryophyte communities characteristic of exposed turf, hard chalk rock and flinty soils. The diverse lichen community has the Nationally Rare (Red Data Book) *Catillaria aphana* on chalk pebbles with a range of more widespread species on turf such as *Cladonia rangiformis*, *Lecania cyrtella* and *Collema tenax*. The range of habitats, notably the north facing grassland and disused chalk pits support the richest chalk grassland bryophyte flora in the county. The Nationally Rare (Red Data Book) *Weissia condensa* is present on short open turf together with the Nationally Scarce *Pleurochaete squarrosa*. Chalk pebbles in north facing disused chalk pits support bryophyte dominated communities containing the local leafy liverworts, *Frullania tamarisci*, *Scapania aspera* and *Porella arboris-vitae*.

Butterflies are well represented and abundant on the chalk grassland and scrub. Ungrazed tor grass supports strong populations of the Nationally Scarce Lulworth skipper *Thymelicus acteon* whilst the Nationally Scarce Adonis blue *Lysandra bellargus* is present on south-facing, closely grazed turf where its food plant horseshoe vetch is abundant. Local butterflies with a restricted distribution in Dorset include chalkhill blue *Lysandra coridon*, dingy skipper *Erynnis tages* and grayling *Hipparchia semele*. The Nationally Scarce grey bush-cricket *Platycleis albopunctata* is

present on Ballard Down close to the coast whilst the uncommon stripe-winged grasshopper *Stenobothrus lineatus* is present on well grazed, south facing downland. The invertebrate fauna in the woods is not well recorded but local species with a restricted distribution in Dorset indicative of ecological continuity are present such as the snail *Zenobiella subrufescens*, the ash-grey slug *Limax cinereoniger* and the beetle *Pediacus dermestoides*. The Nationally Scarce ladybird *Hyperaspis pseudopustulata* is present in King's Wood.

Ballard Cliff supports an assemblage of Nationally Rare invertebrates found in the chalk scree and seepages such as the case-bearing micro-moths *Coleophora ochrea* and *Eudarcia richardsoni*, the tortrix moth *Epiblema cnicicolana*, the crane-fly *Limonia goritiensis*, the ground beetle *Dromius vectensis*. Nationally Scarce invertebrates that have been recorded include Lulworth skipper, the day flying moth *Cistus forester* *Adscita geryon*, the snail eating ground beetle *Lincinus punctatulus*, the large chrysalis snail *Abida secale* and the ground bug *Heterogaster artemisiae*.

Geological Interest:

Purbeck Ridge (East) incorporates three Geological Conservation Review sites which are of national importance for their geological and geomorphological features.

The low sea-cliffs from Swanage Bay to Ballard Point expose Upper Wealden sands and clays which are overlain by sediments of Aptian age (the Lower Greensand). The Wealden Beds are represented by the Wessex Formation which comprises a thick succession of alternating multicoloured marls, sands and interbedded shales. These were deposited in freshwater or periodic subaerial alluvial plain conditions. Sedimentary structures and coarse sandstones suggest more vigorous and intermittent braided rivers. About the middle of the formation is the Coarse Quartz Grit Member which comprises pebbles and sands of predominantly Cornubian origin (K-feldspar), tourmaline, American staurolite, kyanite). The upper parts of the Wessex Formation have yielded the broken trunks of fossil trees, *Iguanodon* bones and cast of large *Unio* in ironstone concretions.

The overlying Wealden Shales (the Vectis Formation) were deposited in a shallow lagoonal environment and contain a fossil fauna and flora indicating a wider range of salinities than the Wessex Formation. The shales abound with ostracods *Cypridea* and intercalated limestones contain gastropods *Viviparus* and bivalves *Ostrea*. The Vectis Formation is only 35 metres thick at Swanage and continues the westerly thinning seen in the Isle of Wight. This attenuation is not fully understood and may result from a facies change, non-deposition, erosion or a combination of these factors.

Punfield Cove provides a complete section through the Lower Greensand and was originally proposed as the type locality for the 'Punfield Formation'. The base of the Lower Greensand is marked by a pebble bed which is overlain by a series of clays and ferruginous sandstones including a thin, but highly fossiliferous limestone termed the Punfield Marine Band Member. This limestone is palaeontologically of great significance – with a unique and palaeoecologically important mollusc and decapod fauna. Stratigraphically and palaeogeographically Punfield Cove is critical in demonstrating Lower Greensand thickness changes from the Isle of Wight westwards.

Ballard Down is a key site for coastal geomorphology. The section from Ballard Point southwards to Ballard Estate contains exposures of chalk and unconsolidated sands and gravels, each of which responds in a different manner to the erosion on a coast facing storms from a southerly direction. The steeply dipping chalk exceeds 100 metres in height before dropping away in Punfield Cove. Cliff falls in unconsolidated sands and clays are frequent and feed a shingle and cobble beach at the southern end of Swanage Bay.

¹ Species listed on Annex 2 of European Habitats and Species Directive.